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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/965,515	09/25/2001	Adam T. Lake	10559-528001	3319

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EXAMINER

LEHNER, WILLIAM P

ART UNIT	PAPER NUMBER
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2671

DATE MAILED: 09/25/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/965,515

Applicant(s)

LAKE ET AL.

Examiner

William P Lehner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/3/01 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-5, 7-15, 17- 25, and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai (2001/0026278A1) in view of Pallister (2002/0101421).

2. In regard to claim 1, note Arai's skeleton and polygons, and his skeleton compression (page 1, column 1, lines 1-7). Arai does not disclose a method of compressing the polygon mesh. Pallister discloses a method of reducing the polygon mesh in order to reduce the amount of data that needs to be stored, and to speed up processing (page 1, column 1, lines 1-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Arai's compression apparatus to reduce the number of polygons as taught by Pallister because this uses less data and is faster.

3. Arai does not reduce the number of bones after reducing the polygon mesh. Pallister teaches that the skeletal information may be used to determine when to repeat the reduction process (page 2, column 1, lines 5-8), to further compress the data. Repeat implies that the operation was already performed once prior to the reduction of the skeleton. Therefore, it would have been obvious to one of ordinary skill in the art at

the time the invention was made to modify Arai's compression apparatus to reduce the number of polygons after reducing the polygon mesh as taught by Pallister because this further compresses the data.

4. In regard to claim 2, note Arai's parenthood hierarchy (FIG 8), and reduction of the higher-level skeleton (page 4, column 2, lines 18-22).

5. In regard to claim 3, note Arai's the multiple levels of hierarchy (FIG 8). The lower-level skeletons have a higher resolution than their parents, so they are reduced while the parent skeleton is not (page 4, column 2, lines 18-22).

6. In regard to claim 4, note the operation conducted between the compressible skeleton and the lower-level skeleton (page 4, column 2, lines 18-22).

7. In regard to claim 5, Arai does not reduce the polygon mesh. Pallister teaches removing edges of polygons to reduce the amount of data (page 1, column 1, lines 34-36). Removing the edge between two polygons will combine them (Official Notice).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Arai's compression apparatus to combine polygons as taught by Pallister because this reduces the amount of data in the 3D model.

8. In regard to claim 7, Arai's apparatus indirectly receives an instruction from the user to reduce the number of bones. The user sets a weight compression threshold value (page 4, column 1, line 49). This weight compression threshold value is used to determine which skeletons are compressed (FIG 1, elements 31 and 40).

9. In regard to claim 8, note the above rejections to claim 1 and 7.

10. In regard to claim 9, note the above rejection to claim 2.

11. In regard to claim 10, note the above rejection to claim 3.

12. In regard to claim 11, note Arai's computer-readable storage media (FIG 9, elements 200-203).
13. In regard to claims 12 - 17, note the above rejections to claims 2 – 7, respectively.
14. In regard to claim 18, note the above rejections to claim 8 and claim 11.
15. In regard to claim 19, note the above rejection to claim 2.
16. In regard to claim 20, note the above rejection to claim 3.
17. In regard to claim 21, note Arai's computer (FIG 9, element 204).
18. In regard to claims 22 - 27, note the above rejections to claims 2 – 7, respectively.
19. In regard to claim 28, note the above rejections to claims 18 and 21.
20. In regard to claim 29, note the above rejection to claim 2.
21. In regard to claim 30, note the above rejection to claim 3.
22. Claims 6, 16, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai (2001/0026278A1) in view of Pallister (2002/0101421), in further view of Persson (6317125). Arai and Pallister both have a 3D model, and all 3D models should have a virtual camera (Official Notice). However, Arai and Pallister are lacking compression based on a distance from the virtual camera. Persson discloses a 3D model containing bones and polygon meshes, and teaches reducing the resolution of objects commensurate with their position in the game space, i.e. distance from a virtual camera (column 2, lines 35-37), in order to optimize the resolution for a particular view (column 1, lines 40-48). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Arai's and Pallister's 3D models to

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reduce the resolution of the polygon mesh and bones based on an objects distance from the virtual camera as taught by Persson because this optimizes the resolution for a particular view.

Conclusion

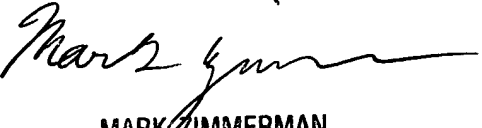
23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. O'Rourke and Isaacs both disclose methods of reducing polygon mesh and skeleton data.

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P. Lehner whose telephone number is 703-305-0682. The examiner can normally be reached on 8:30 - 5 M-F.

25. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman can be reached on 703-305-9798. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-9730 for regular communications and 703-308-9051 for After Final communications.

26. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-0377.

WPL
August 25, 2003


MARK ZIMMERMAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600